

MUSICAL INSTRUMENTS



Museum News The Toledo Museum of Art

FOREWORD

Music has been an essential part of the life of this Museum since its early days. It was a major personal interest of Florence Scott Libbey, who gave special endowments to build music education programs at the Museum. Informal programs preceded the first series of concerts by Toledo musicians in the former Hemicycle of the 1912 portion of the present building, and in 1917 the music education program began with Music Hours for children. Construction of the present Auditorium in 1925, the original location of the Museum's Skinner organ, increased audience potential, and in 1927 the tradition of free Saturday music classes for children was launched. The first full time professional in music joined the Museum's staff in 1931. In 1933 the construction of the Peristyle was completed under the interested patronage of Mrs. Libbey. The Museum's concert program was greatly expanded to become a community focus for performances by the world's great musicians and dancers.

Today, the Museum offers week-day and Saturday classes for children, as well as evening classes for adults. Concert programs now include the Peristyle Series of major orchestras, soloists and dance companies, the Great Gallery Series of chamber music, and Sunday Free Concerts and Gallery Gigs by musicians of this region. The diverse programs of the music department, unique among American museums in their scope, quality and scale, are conducted by a staff of four.

This is the first issue of *Museum News* to be entirely devoted to a subject concerning music. While the Museum has no actual instrument collection, there are five period keyboard instruments in playing condition, and also a wealth of depictions of musical subjects in the Museum's collection of visual arts. These images and instruments are grouped in these five articles according to their means of sound production, and placed in historical perspective.

Joyce Smar, Supervisor of Music, Michaelene Gorney and Jane Vial, Music Instructors, have been responsible for the conception, research and writing of this issue. Unless otherwise noted, all works of art illustrated are the gift of Edward Drummond Libbey.

Roger Mandle, Director

Cover: Detail, Pompeo Batoni, *The Madonna and Child in Glory*, ca. 1747 (see Figure 8).

MUSICAL INSTRUMENTS

Strings

String instruments can be traced back five thousand years to ancient Sumeria, although they are probably much older than this. Historians have speculated they developed from the hunter's bow, with its curved wood and taut string. These instruments usually consist of a length of silk or wire stretched over raised supports called bridges, while a soundboard beneath the stringing reinforces the tone and makes its vibrations audible.

Of the plucked strings, the lyre is among the oldest, dating to about 3000 B.C. in Sumeria. This Sumerian instrument stood higher than a seated man, and it seems such larger instruments preceded the smaller Greek lyre, whose characteristic soundbox was shaped like, and originally made from, a tortoise shell with oxhide stretched across the front and two curved horns rising from it. These were joined by a crossbar carrying tuning pegs to which gut strings were attached by pieces of fatty hide. On a Greek kylix or drinking cup, one of two dancing revelers holds a lyre with seven strings (fig. 1). The instrument is held to the side of the body, with either hand in position to pluck or dampen the strings.



Figure 1. Detail: Interior of a kylix by the Foundry Painter. Attic red-figure. Greek, 490-80 B. C. Earthenware, diam. 11³/₈ in. (28.8 cm), 64.126.



Figure 2. Detail: Main scene of a hydria by the Antimenes Painter. Attic black-figure. Greek, 490-80 B.C. Earthenware, ht. 20½ in. (52 cm), 56.70.



Figure 3. Detail: Copy after Roger Campin, Flemish, 1378/79-1444. *The Virgin in an Apse*, ca. 1490-1520. Oil on panel, 19⅜ x 14 in. (49.2 x 35.6 cm), 54.60.

Since the lyre is an open-string instrument, the number of available pitches depends on, and is equal to, the number of strings. So far as we know, the Greeks never sounded two or more tones at one time. The performer, using fingers, a plectrum, or sometimes both, duplicated the vocal melodic line, probably with some ornamentation, and provided interludes while the voice rested.

The kithara is a form of lyre, distinguished by its much larger soundbox, usually squared-off at the bottom, while the lyre is rounded, following the shape of its original tortoise shell construction. A seven string kithara on a Greek hydria, a water vessel, is played by Apollo, musician of the gods (fig. 2). This subject reflects the lyre's close association with the Greek dieties, particularly Apollo, who upheld the virtues of moderation, control and equilibrium against the Dionysian attributes of excess and intoxication represented by the wind instruments.

As ancient as the lyre, but still in use, is another open-string instrument, the versatile harp, whose triangular shape and sturdy construction is formed by a wooden frame composed of a hollow soundboard, peg arm and fore pillar. This last element, often decorated with a top ornament, appeared in the eleventh century, when larger numbers of strings required more support for the increased tension on the soundboard and peg arm. Though the modern harp is made in three separate parts, earlier harps were sometimes carved from one piece of wood. The Gothic harp in a Flemish painting of about 1500 is apparently of one-piece construction (fig. 3). The number of strings varied considerably during the Middle Ages, some illustrations showing as few as six or seven, while Guillaume de Machaut in the fourteenth century compares the twenty-five virtues of his lady to the twenty-five strings of his harp. The instrument shown here has a single set of strings secured to the upper arm by tuning pegs which are tightened or loosened to alter the pitch. The angel assumes the correct playing position, the right hand ready to pluck the strings, the left ready to dampen the vibration.

The lute, the ultimate solo instrument of the Renaissance, was introduced to Spain by the Moors. It became popular in fifteenth century Europe, holding its position as the leading solo instrument until the seventeenth century. It is pear-shaped, with a curved back, flat belly, fretted fingerboard, and pegbox bent back at a sharp angle to the neck. The man's lute in Terborch's painting

illustrates most of these characteristics (fig. 4), while a lute hanging on the wall in Molenaer's *Allegory of Vanity* (fig. 5) clearly shows the convex back, whose ribs are shaped over a mold and usually made of sycamore.

Lute development in the fourteenth and fifteenth centuries saw the introduction of paired strings called "courses," especially in the bass register, to meet the need to accompany singers and other instrumentalists. Two such accompaniment lutes are the double-necked lute and the chitarrone. In the Terborch, the woman's lute shows the double neck peg box with sixteen courses of strings. The Italian chitarrone is a long-necked lute

whose longest strings met the demand for increased lower register. This example is unusual in that it has single strings instead of courses (fig. 6), while the sound-hole, located about half-way between the bridge and the base of the neck, is covered with the customary elaborately carved "rose."

Rivaling the lute's importance in the Renaissance was the viol, a bowed instrument made in several sizes. Viols are distinguished in shape from violins by their sloping shoulders. A "chest" of viols, made as a set perfectly matched in pitch, may consist of two treble, two tenor, and two bass instruments to form a consort of viols





Figure 5. Jan Miense Molenaer, Dutch, ca. 1610-1685. *Allegory of Vanity*, 1633. Oil on canvas, 40 $\frac{1}{4}$ x 59 in. (102 x 127 cm), 75.21. Instruments on the wall (left to right): cittern, violin, shawm, lute, recorder, transverse flute, cello.

Figure 6. Chitarrone. Italian (Florence), 16th century. Wood, ivory and parchment, l. 74 $\frac{1}{8}$ in. (88.1 cm). Gift of Mr. and Mrs. Marvin S. Kobacker, 69.334.

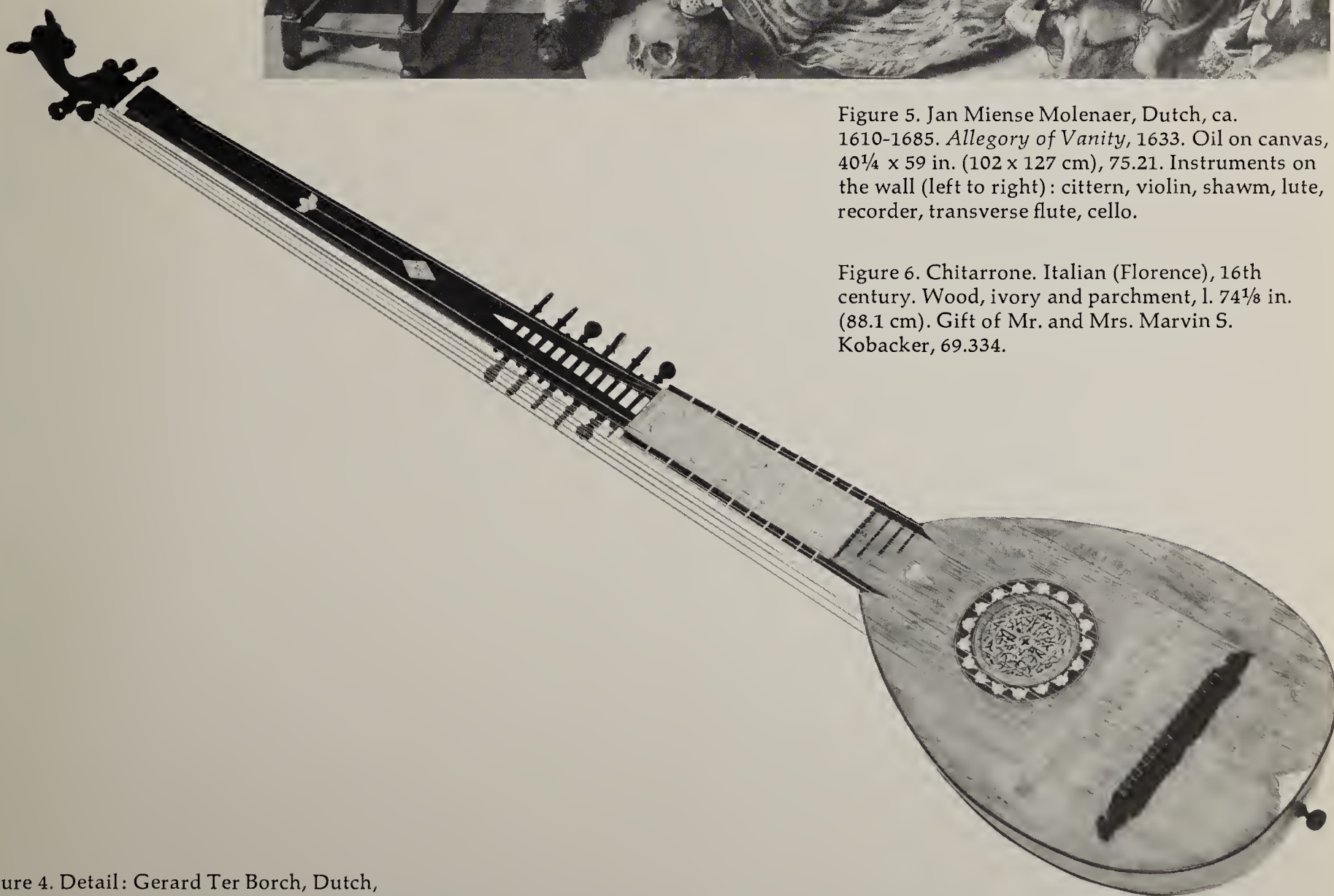


Figure 4. Detail: Gerard Ter Borch, Dutch, 1617-1681. *The Music Lesson*, 1660s. Oil on canvas, 34 x 27 $\frac{5}{8}$ in. (86.3 x 70.1 cm), 52.9.

which can perform music in several parts. In a painting by Pannini (fig. 7), music is performed (from left to right) by a bass viol, tenor viol, treble viol, lute, two singers, lute, and a shawn. The treble and tenor viols are supported by the players' arms and shoulders, a position usually reserved for members of the violin family. Because they have chosen a violin position, the two violists also use the overhand technique common to violin playing. The bass viol player, although resting at the moment, shows true viol form. This important piece of evidence reflects the exchange of performance practices between two simultaneously developing instruments, the viol and violin. No wonder visual artists sometimes were confused when depicting playing techniques that were constantly changing! Pannini's musicians with their sixteenth century costumes and archaic instruments are appropriate details in his Renaissance architectural fantasy.

Dominant among stringed instruments since the Baroque period is the violin family, which also includes the viola, violoncello (or cello) and double bass. Though its place of origin is not entirely certain, sixteenth century

references point to Poland as its home. Batoni's angelic violinist and cellist exemplify proper playing and bowing positions (fig. 8 and cover). The violinist's bow retains the archaic hunter's bow shape, and both use the overhand method of bowing. The heavenly trio is completed by the addition of a shawm, a Renaissance wind instrument and predecessor of the oboe. The violinist seems lost in the beauty of his own music-making, while the cellist and shawm player appear to be tuning their instruments. Both a violin and a cello, but with bows of modern form, hang on the wall in Molenaer's *Allegory* (fig. 5).

The cittern, a small plucked instrument, is also pictured by Molenaer (fig. 5). It has courses of strings, and is a fig-shaped instrument with a flat back sloped toward the belly. The cittern never achieved the artistic status of the lute, but as it was small, portable, cheap and easy to play, its versatility made it a respected member of the Renaissance instrumental ensemble.

Michaelene Gorney



Figure 7. Detail: Giovanni Paolo Pannini, Italian, 1691/92-1765. *Architectural Fantasy with a Concert Party*, ca. 1716-17. Oil on canvas, 39 x 29 in. (99.1 x 73.6 cm), 64.30.



Figure 8. Pompeo Batoni, Italian, 1708-1787. *The Madonna and Child in Glory*, ca. 1747. Oil on canvas, 46½ x 24 in. (118 x 61 cm), 63.5.



Figure 9. Follower of Frans Hals, Dutch, ca. 1580-1666. *The Flute Player*. Oil on canvas, $25\frac{5}{8}$ x $25\frac{1}{2}$ in. (65 x 64.7 cm), 26.67.

Figure 10. Detail: Claude Lorrain, French, 1600-1682. *Landscape with Nymph and Satyr Dancing*, 1641. Oil on canvas, $39\frac{1}{4}$ x $52\frac{3}{8}$ in. (99.6 x 133 cm), 49.170.

Woodwinds

Each wind instrument encloses a column of air set into vibration by blowing across or through a mouthpiece, mouth-hole, whistle, or reed to produce a sound. Winds include brasses, flutes, clarinets and oboes; the last three are woodwinds.

The flutes include transverse flutes, recorders, pipes, panpipes, nose-flutes, ocarinas and whistles. The earliest known flute, a whistle instrument, dates from the later Stone Age, while the modern transverse flute first appeared in Europe at the end of the twelfth century. The recorder is the most important of the end-blown flutes. Because the playing position is similar to that of other wind instruments, documentation of the recorder's invention and development is difficult. However, we do know the recorder attained final form in the Middle Ages, and during the sixteenth century formed a com-

plete family of instruments ranging from treble to bass that had an important part in Renaissance music.

In Molenaer's painting of 1633 (fig. 5) a recorder hangs to the lute's right; its "whistle" hole near the top contains a slanted piece of wood which makes the column of air vibrate as the player blows into the mouthhole. Next to it is a transverse flute, whose mouthhole, across which the player blows as he holds the flute to the side, is slightly larger than the fingerholes. A painting by a follower of Frans Hals shows the embouchure or lip position formed by the flutist's cheeks and mouth (fig. 9).

Mythological beings are often shown with pipes or flutes, as in Claude Lorrain's landscape, where they are accompanied by a transverse flute and tambourines (fig. 10). Panpipes, said to have been invented by the rustic god Pan, are several flutes banded together. In





Figure 11. Carlo Cesio, Italian, 1626-1686.
Polyphemus and Acis, ca. 1675, after Annibale
 Carracci. Engraving and etching, 13½ x 10 in.
 (34.2 x 25.5 cm). Gift of Irving E. Macomber, 64.5.

mythology they were played by the giant Polyphemus, who is shown breaking off his love song as the sea nymph Galatea approaches on a cockle shell drawn by dolphins (fig. 11).

Reed instruments, in which a reed sets the air column in motion, are divided into two groups: single reed and double reed. A single reed instrument is the clarinet, whose reed vibrates against the mouthpiece, while a double reed example is the oboe, whose two reeds vibrate against each other.

The double reed aulos, a double pipe of cane, wood, or metal, was the most important wind instrument of the ancient Greeks, and dates as early as 2700 B.C. Aulos music was supposedly fast, rhythmic and exciting and was commonly used for the orgiastic rites of Dionysos, as shown on a 6th century krater, a mixing vessel for wine (fig. 12).

The shawm, a descendant of the aulos and predecessor of the modern oboe, was the chief double reed instrument until the seventeenth century, and one of the first instruments to comprise a family consort. The medieval shawm had a raucous sound, in contrast to the refined, intimate tone of the modern oboe. Shawms survive in Morocco, China, Egypt, Spain and Turkey, where one can still earn a living as a shawm player. The conical shawm appears in the Molenaer (fig. 5), and in the paintings by Pannini and Batoni it is actually being played (figs. 7 and 8). The hand positions are clearly shown, three fingers of the left hand over the top three holes and four fingers of the right over the lower three. Such accurate renderings of the performance practice are valuable when the instrument is no longer in familiar use.

Bagpipes are probably the most widespread and continuously used medieval instrument, and they still flourish in many parts of the world. Continuous sound is produced by a bag attached to the pipes which is inflated by the player blowing into the mouthpipe. While he takes a breath, the reeds are kept vibrating by air from the bag, which is regulated by arm pressure. The bag is



Figure 12. Detail: Main scene of a calyx krater by the Rycroft Painter. Attic black-figure. Greek, 520-510 B.C. Earthenware, ht. 15-7/16 in. (39.2 cm), 63.26.

usually a complete animal skin with the pipes attached to the neck and leg holes by wooden stocks. The pipes and chanter contain double reeds. The pipes are drones sounding one pitch, while the chanter with its finger-holes sounds the melody. Jan Steen's painting (fig. 13) illustrates bagpipes in the playing position, with two pipes over the shoulder, the bag tucked under the arm, and the chanter being fingered for the tune. Because of its idiosyncracies, the bagpipe is rarely combined with other instruments.

The musette, an elegant court version of the bagpipes often highly decorated with elaborate needlework and costly materials, was popular in seventeenth and eighteenth century France. A musette in a still life of 1725 has two ebony and ivory chanters which have keys over some finger-holes (fig. 14). The drone pipes are incorporated into the protrusion at the top left of the musette; the white pieces are the reeds.

Jane Vial

Figure 13. Detail: Jan Steen, Dutch, 1626-1679.
Peasants Before an Inn, 1650s. Oil on panel, 19 $\frac{3}{4}$
x 24 $\frac{1}{4}$ in. (50.2 x 61.6 cm), 45.32.



Figure 14. Jean-Baptiste Oudry, French, 1686-1755.
Still Life with Musette and Violin, 1725. Oil on
canvas, 34 $\frac{1}{2}$ x 25 $\frac{3}{4}$ in. (87.5 x 65.4 cm), 51.500.





Figure 15. *St. Blaise*. German, ca. 1400.
Silver, partly gilt, ht. 10 $\frac{1}{4}$ in. (26 cm).
Gift of Florence Scott Libbey, 62.68.

Brasses

Brass instruments are distinguished from the woodwinds by cup-shaped mouthpieces into which the player buzzes his lips, which act as vibrating reeds. Different notes are produced by changing the speed of lip vibration.

As they produced only two or three notes, the earliest horns were valued for signaling rather than for musical qualities. They were made of natural materials, such as animal horns and tusks, and, lacking a cup mouthpiece, produced far from beautiful sounds, if we can trust the words of Plutarch, who compared the Egyptian trumpet's sound to the braying of an ass! The oliphant, made from an elephant tusk, appeared in tenth century Europe, imported from Byzantium. A richly mounted oliphant is held by a figure of St. Blaise, a bishop of Armenia martyred in 316 A.D., who became the patron of wind instruments because of a pun on his name linking the Latin *Blasius* with the German *blasen*, "to blow." (fig. 15). The conch shell is another primitive ancestor of the modern brasses. The agile triton (fig. 16) expends plenty of energy blowing into a hole at the end of his shell, placing his lips around the opening.

Early metal trumpets, without valves, keys, slides or fingerholes, were limited to notes of only one harmonic series. The higher notes were played by tightening the embouchure. The medieval straight trumpet was an instrument over six feet long made in jointed metal sections with a flared bell. The clarion, a shorter straight trumpet up to three feet long was favored for military use. It was easy to carry and the high-pitched signals could be heard above the noise of battle. Among several good depictions of straight trumpets in the



Figure 16. *Triton Blowing a Conch Shell*. French, about 1700. Lead, ht. 37 $\frac{1}{4}$ in. (95 cm). Gift of Mr. and Mrs. Edward H. Alexander, 73.36.

collection, one of the most beautiful is a Flemish tapestry of about 1500 telling the classical myth of the Calydonian Boar Hunt, and including six trumpeters (fig. 17). The trumpet held by the musician at the left shows a mouthpiece that is slightly curved so that it may be angled up or down.

The curves found on modern brass instruments are practical, since trumpets and horns over six feet long would be difficult to carry and to play. An excellent example of the useful curve, in this case a complete circle, is found in the form of a hunting horn on a German glass dish of about 1730 (fig. 18) which makes clear the direct derivation of the modern French horn from this Renaissance instrument. Such extreme curvatures were made possible by the great sixteenth century improvements in metal-working which set new standards of sound quality and accuracy of pitch. Because of the horn's limited range, the meaning of signals depended on rhythm rather than melody.

William Blake's *Book of Job* is a veritable treasure house of instruments, and his use of the early lute, lyre, harp and brasses long after they had passed out of use enhances the antiquity of the Old Testament subject. *So the Lord Blessed the Latter End of Job* includes three straight trumpets (fig. 19), a curved horn and a spiraled horn. Instruments such as these, without any standardized shape, had largely disappeared by the seventeenth century in favor of the more efficiently formed folded trumpet and circular horn.

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Figure 17. Detail: The myth of the Calydonian Boar Hunt. Flemish (Brussels), ca. 1525. Tapestry, 136 x 202 in. (345.5 x 514 cm), 28.204.



Figure 18. Detail: Glass basin with black enamel painting attributed to Ignaz Preissler, Bohemian, ca. 1730. 11 $\frac{1}{8}$ x 8 $\frac{1}{2}$ in. (28.2 x 21.6 cm), 50.46.



Figure 19. Detail: William Blake, British, 1757-1827. *So the Lord Blessed the Latter End of Job*, from *The Book of Job*, 1825. Engraving, 6 $\frac{5}{8}$ x 8 $\frac{5}{8}$ in. (16.8 x 22.8 cm), 43.5V.



Figure 20. Detail: Jean Duvet, French, 1485-ca. 1570. *The Angel in the Sun Calling the Birds of Prey*, from *The Apocalypse*, 1561. Engraving, $11\frac{3}{4} \times 8\frac{5}{8}$ in. (29.8 x 21.8 cm), 31.10.



Figure 21. Gavarni, French, 1804-1866. *Le Galoubet*, from *Musiciens Comiques ou Pittoresques*, 1843. Lithograph, $7\frac{1}{2} \times 5\frac{7}{8}$ in. (19 x 14.9 cm), 19.59.

Percussion

Percussion instruments are sounded by shaking or striking one object against another. Although we know from Mesopotamian sources that they were important in religious and social rituals as early as 3000 B.C., few ancient examples have survived due to their perishable materials.

The drum consists of a membrane, commonly of animal skin glued, nailed, pegged or laced to a frame which varies in size and shape. It has a single or double head played with the hands, sticks, padded beaters or brushes. Some drums can be tuned to specific pitches by adjusting the lacing, or by using tuning pegs or taps to alter the tension of the membrane.

An engraving by Jean Duvet illustrates a cylindrical drum with snares on the upper drumhead (fig. 20). A snare is a length of wire or gut attached across a drumhead, the snare vibrating as the drum is played. In the Middle Ages and Renaissance snares were placed on the upper drumhead, that is, the one that was beaten, while today they are found on the bottom head.

An important combination of wind and percussion is the pipe and tabor, which flourished as the military fife and drum and survives today in band arrangements featuring the flute and drum. The simplicity of the pipe, which has a range of about five notes, enables the player to perform simultaneously on the tabor, a small drum attached to the left arm, wrist, or little finger, and struck with the right hand. A direct derivation of the pipe and tabor is played by Gavarni's street musician (fig. 21). The pipe is a *flûtet* or *galoubet*, simple enough to be played with the left hand alone. The drum is the *tambourin de Provence*, also the name of a dance traditionally accompanied by these two instruments.

A small pitched drum with an hourglass shape is the *tsuzumi* used in the Japanese traditional *noh* drama. The wooden drum body is usually carved outside and lacquered inside. The heads of hide stretched over iron rings are held against the body with ropes. A *tsuzumi* is found on a charming netsuke (fig. 22), a toggle used to secure an intro to the owner's sash or belt. The intro, a small case, was fashionable in Japanese men's wear from the seventeenth to the nineteenth centuries. Tradi-



Figure 22. Netsuke in the form of a man holding a *tsuzumi*, Japanese, 19-20th century. Wood, ht. 2 in. (5 cm). Gift of Richard G. Joseph, 47.44.

tionally, the *tsuzumi* is held in front of the body; here it rests on the figure's right shoulder.

Tambourines, triangles and cymbals have diverse associations from religious services to secular musical entertainments. The cymbals held by a female musician among these Chinese earthenware tomb figurines (fig. 23) were meant to provide music for the entombed person along with the *p'ip'a* or lute, flute, and another instrument, possibly a mouth organ or *sheng*, which has fallen from the figure's hands. Cymbals may range in size from small finger cymbals to large orchestral instruments. They may be flat or hemispherical, or a combination of both, appearing as a shallow bowl-shaped hat with a wide brim. Cymbals are struck together and allowed to vibrate until the player dampens the sound by pressing the rims to his body.

A triangle being played appears on an Italian Renaissance cassone or marriage chest in a relief-carved procession closely adapted from a Roman marble sarcophagus of the second century A.D. Until the nineteenth century, the triangle carried metal rings on its horizontal bar which jingled when the instrument was struck with a metal beater. The use of rings connects the triangle with the ancient sistrum, a U-shaped instrument whose loose crossbars rattled when shaken. Today's triangle has an opening at one of its lower angles which eliminates the use of metal rings and allows the triangle to resonate when struck.

Modifications of the tambourine, first used by the Assyrians, can be found in China, India, Peru and Greenland. Struck with the fingers or hand, it consists of jingling metal bells or discs within a circular wood frame that may be covered with skin on one side. The Romans used the tambourine to arouse frenzy during Bacchic rites, and it is also depicted in religious carvings and paintings. Two tambourines are carried by figures in the landscape by Claude Lorrain (fig. 10). The nymph's tambourine has a drumhead played with the fingers while that of the dancing satyr has a frame and jingles.

Michaelene Gorney



Figure 23. Four musicians and a court lady. Chinese, T'ang Dynasty, 618-906 A.D. Painted earthenware, ht. 6, 14 $\frac{3}{4}$ in. (15.3, 37.5 cm). George E. Pomeroy Bequest Fund, 39.72-76.



Figure 24. Detail: The Triumph of Ceres from a cassone, Italian, late 16th century. Walnut, partly gilt, 32 x 72 in. (81.2 x 183 cm). Gift of Florence Scott Libbey, 66.120A.

Keyboard

Although works of art in the Museum illustrate rather few keyboard instruments, this is offset by the presence of several outstanding instruments in working condition, each of which is also a considerable rarity, or remarkable in some other respect.

The oldest keyboard instrument, the organ, is a set of pipes on a wind chest with a valve for each pipe which is opened and closed mechanically when keys are pressed. A steady supply of air is provided by bellows or, more recently, by an electric blower. For a variety of tone color, most organs have several sets or ranks of pipes which can be brought into play or retired by pulling or pushing stops.

The organ of the ancient Greeks was equipped with levers pressed down by the fingers, and was the first known instrument to use the keyboard principle. About 1300 two types of existing smaller organs were refined: the portative, a portable instrument which played only one note at a time, and the positive, a stationary instrument of moderate size which could sound more than one note at a time. A portative organ appears in a fifteenth century Italian engraving of Polymnia, the muse of the heroic hymn, who is usually shown with such an organ (fig. 25).

A beautiful example of a positive organ in the Museum's collection is the Dutch "bureau" chamber organ attributed to the famous eighteenth century Haarlem organ builder Johann Strumphler (fig. 26). When closed it resembles a bureau or writing desk. There is one manual or keyboard with fifty-four ivory keys, and the stops which bring various sets of pipes into play are of ebony and mother-of-pearl. There are 326 metal and wood pipes. The original bellows was operated by foot pedals, though an electric blower is now used. The excellent playing condition is highly unusual among organs of this type, and its frequent use in performance is a



Figure 25. Master of the E Series Tarocchi, Italian (Ferrara). *Polymnia*, from *Apollo and the Muses*, ca. 1465. Engraving, 7 x 3 $\frac{3}{4}$ in. (17.8 x 9.5 cm). Frederick B. Shoemaker Fund, 53.5.



Figure 26. Johann Strumphler, Dutch, 1736-1810.
Bureau Organ, ca. 1785. Mahogany veneer case, ht.
101½ in. (157.8 cm), 65.175.



tribute to the quality and durability of its construction.

Besides surviving in its own right, the positive organ became wholly incorporated into the larger "great" organ, such as the Museum Peristyle's instrument built in 1927 by the Skinner Organ Company of New York. It represents American leadership in organ building in the 1920s and 30s, and was given by the sisters of Edward Drummond Libbey. The tonal design was by the noted organist W. Lynnwood Farnam, and each of the five sets of pipes housed in two chambers flanking the Peristyle stage is a positive organ in itself; together they constitute a "great" organ. The four manuals, a pedal keyboard, and the stops and couplers are contained in a large moveable console. A special feature is an automatic mechanism for playing organ rolls, and this is one of the few remaining theater organs with the player mechanism still intact.

Inside this pagoda clock is a miniature spring-driven pipe organ (fig. 27) which has three ranks of pipes and is operated like a music box by a roll mechanism which plays three mock-oriental tunes. The gilt bronze case reflects fantastic European ideas about the exotic East. The clock has six small bells which announce the quarter hour and a large bell which strikes the hour, while mechanical ships sail past painted Oriental landscapes in the tower.

The virginal and the related harpsichord are plucked keyboard instruments which originated in the fifteenth century. In both, as a key is pressed, a quill attached to a wood jack is pushed up to pluck the string. The wooden cases may be simply constructed, or elaborately decorated with gilt, inlay or paintings. The rectangular virginal has one keyboard and its strings, parallel to the

keyboard, are stretched over two bridges. A characteristic virginal with a painted case appears at the left in Molenaer's *Allegory of Vanity* (fig. 5). An extraordinary small table virginal is the octavina made in 1594 in Rome by Giorgio da Trento for a cardinal of the Farnese family, whose coat-of-arms appears on the lid (fig. 28). Less than eighteen inches long, the octavina encompasses just over two octaves and, remarkably, it remains in good playing condition. Of note is the exquisitely carved rose over the sound-hole.

The piano's full name, pianoforte ("soft-loud"), describes its ability to produce different volume levels not possible on a virginal or harpsichord. Piano strings are stretched over a soundboard and struck by hammers connected to the keys by a complex mechanism called the action. Pedals enable the player to sustain a note or chord, or to soften the sound. Although the piano developed gradually, Bartolomeo Cristofori is generally cited as its inventor in 1709.

Among the most celebrated pianos of the eighteenth century were those built by the Stein family of Augsburg and Vienna. The Toledo collection includes one of two pianos in this country built by the Steins, made by Johann Stein at Augsburg in 1784 (fig. 29). The even tone quality of Stein pianos admired by Mozart is still impressive today. The light "Viennese" action needs only a third to a half the weight required by modern actions to depress the keys. Stein took particular pride in the strength of his spruce soundboards, seasoning them in all kinds of weather, and the fact that this piano could be restored to playing condition owes much to this construction. The damper "pedal" under the keyboard operated by knee-levers was a Stein invention. The colors of the sixty-one keys reflect an arrangement common to



Figure 28. Giorgio da Trento, Italian. Octavina, dated Rome, 1594. Painted and gilded wood case, l. 17 $\frac{1}{4}$ in. (43.8 cm). Gift of Florence Scott Libbey, 25.1140.



Figure 29. Detail: Johann Andreas Stein, German, 1728-1792. Pianoforte, 1784. Wood case, w. 38 in. (96.5 cm). Gift of Nettie Poe Ketcham, 25.1047.

France and Germany in the eighteenth and nineteenth centuries intended to show off the white hands of female keyboard artists.

The Museum's early American square piano made by Nunns, Clark and Company of New York in the 1830s (fig. 30) has seventy-three keys, while the modern piano has eighty-eight. The newly introduced iron frame made possible increased tension on the strings, resulting in a sound louder than that of the Stein, though softer than a modern piano. While the soft pedal normally shifts the hammers so that they do not strike all the strings of one note, the Nunns, Clark mechanism simply muffles the strings.

Jane Vial

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Figure 30. R. Nunns, Clark and Company, New York. Piano, 1830-31. Mahogany veneer case, l. 70½ in. (179.1 cm). Gift of George F. Medill in memory of the Lord family, 68.12.



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